

**SANTA CLARA SQUARE
REVISED ENVIRONMENTAL NOISE ASSESSMENT
SANTA CLARA, CALIFORNIA
21 April 2005**

Prepared for:

MINDIGO & ASSOCIATES
Richard P. Mindigo
1984 The Alameda
San Jose, CA 95126
Phone: (408) 554-6531
Email: rmindigo@aol.com

Prepared by:

CHARLES M. SALTER ASSOCIATES, INC.
Joshua M. Roper, Senior Consultant
2880 Zanker Road, Suite 203
San Jose, CA 95134
Phone: (408) 432-7270
Email: josh.roper@cmsalter.com

CSA Project No. 03-0407

INTRODUCTION

The Santa Clara Square project consists of the redevelopment of the existing shopping center located at the corner of El Camino Real and Lawrence Expressway in Santa Clara to include approximately 171,000 square feet of retail space, 12,300 square feet of office space, 490 condominium units, as well as parking lots and parking structures (see Figure 1, attached). This report quantifies the existing and estimated future noise environment, pursuant to applicable acoustical standards.

In summary, interior noise levels would be reduced to City and State standards by incorporating sound rated construction, in the form of sound rated windows and doors, into the exterior building facades.

SITE DESCRIPTION

The 12.5-acre site is currently occupied by a fast food restaurant and shopping center. The noise environment is dominated by transportation-related sources including vehicle traffic on El Camino Real to the north, and Lawrence Expressway to the east. Where adjacent to the site, Lawrence Expressway ramps from ground level (adjacent to the southern portion of the site) to an elevated section passing over El Camino Real to the north. Existing residences are located across Halford Avenue to the west and abut the site to the south.

ACOUSTICAL CRITERIA

City of Santa Clara General Plan

The City of Santa Clara has Noise and Land Use Compatibility Guidelines in the Noise Element of its General Plan 2000-2010. According to these guidelines, noise environments compatible with new residential projects are as follows:

- L_{dn} of 55 to 70 dB:
REQUIRE DESIGN & INSULATION TO REDUCE NOISE LEVELS
- L_{dn} greater than 70 dB:
INCOMPATIBLE. AVOID LAND USE EXCEPT WHEN ENTIRELY INDOORS AND AN INTERIOR NOISE LEVEL OF 45 L_{dn} CAN BE MAINTAINED

For commercial projects, compatible noise levels are 5 dB higher than those for residential projects (as shown above).

Santa Clara City Code

Section 18.26 of the Santa Clara City Code contains performance standards for the generation of noise at adjacent properties. The exterior noise level from any fixed noise source is limited to 55 and 50 dB at residential property lines, for daytime and nighttime¹

¹ Daytime is defined as 7 A.M. to 10 P.M., Nighttime is defined as 10 P.M. to 7 A.M.

activities, respectively. Where adjacent to commercial receivers, noise levels may be 10 dB higher.

California Building Code (CBC)

The California Building Code (Appendix Chapter 12) contains acoustical requirements for interior sound levels in habitable rooms. In summary, the CBC requires an interior noise level no higher than L_{dn} 45 dB. Projects exposed to an exterior L_{dn} of 60 dB, or greater, require an acoustical analysis showing that the proposed design will limit interior levels to the prescribed allowable interior level. Additionally, if windows must be in the closed position to meet the interior standard, the design must include a ventilation or air-conditioning system to provide a habitable interior environment.

NOISE ENVIRONMENT

Existing Noise Environment

To quantify the existing noise environment at the site, we conducted measurements between the 21st and 23rd of October 2003. Three long-term monitors continuously measured noise levels, and several short-term “spot” measurements were taken at various locations and compared with corresponding time periods from long-term monitors to determine how noise levels vary in different areas and elevations.

Existing L_{dn} ², during our measurement period, was 64 dB along Halford Avenue, 71 dB along El Camino Real and 73 dB along Lawrence Expressway (see Figure 1 for measurement locations).

Future Noise Environment

Traffic noise levels are expected to increase by no more than 1 dB in the future, based on traffic data prepared for this project by Hexagon Transportation Consultants. Estimated future noise levels are summarized in the attached site map (Figure 1), and are the basis of our noise mitigation recommendations.

ANALYSIS AND RECOMMENDATIONS

Following are recommendations for addressing each of the applicable criteria listed above, as well as a discussion of the potential impact of the proposed three-level parking structure at the southeast corner of the site on existing residences to the south.

City of Santa Clara General Plan

Estimated future noise levels at the project site range from below L_{dn} 60 dB at the quietest interior courtyards to L_{dn} 74 dB, where units are exposed to vehicle traffic along Lawrence Expressway (see Figure 1). Residential and retail spaces nearest the adjacent roadways will require noise insulation features, such as sound rated windows and doors,

² Day/Night Sound Level (L_{dn}) — A descriptor established by the U.S. Environmental Protection Agency to describe the average day-night level with a penalty applied to noise occurring during the nighttime hours (10 pm - 7 am) to account for the increased sensitivity of people during sleeping hours.

incorporated into the project design. Details of mitigation measures should be determined during the design phase.

The City has not specified noise criteria for outdoor use spaces³, however the Noise and Land Use Compatibility Guidelines in the General Plan seem to suggest that outdoor residential uses be limited to areas where the L_{dn} does not exceed 70 dB.

The proposed building in the northeast corner of the site includes a fifth-floor outdoor use space adjacent to Lawrence Expressway. While estimated future noise levels exceed L_{dn} 70 dB, incorporating a solid noise barrier that blocks the line-of-sight between people in the open space and vehicles on Lawrence Expressway would reduce noise levels to below L_{dn} 70 dB. To the extent that exterior balconies are planned along El Camino Real or Lawrence Expressway, consider inseting them into the building shell and/or incorporating rail-height shielding from roadway traffic.

Santa Clara City Code

The project should incorporate proper mitigation to reduce noise from air-conditioning units and other mechanical equipment to the levels outlined in the City Code. Mitigation may include equipment selection and location and, if necessary, equipment barriers or enclosures. Details of mitigation measures should be determined during the design phase.

California Building Code (CBC)

To meet the interior L_{dn} 45 dB noise criterion, it will be necessary for the exterior façade of some units to be sound-rated. Recommendations for sound-rated construction (i.e., window and door STC⁴ ratings) will depend on the size of rooms, windows and exterior facades, and should be determined during the design phase.

To provide you with a preliminary estimate of the extent of mitigation that may be necessary, we have assumed a typical room size of 12 feet by 14 feet, with the exterior façade consisting of approximately one-third window⁵. Based on these assumptions, units exposed to exterior L_{dn} between 69 and 72 dB will require windows with STC ratings of approximately 30 to 33. Units along Lawrence Expressway, where the L_{dn} ranges between 72 and 74 dB, will require windows with STC ratings of approximately 33 to 35.

In other spaces, where the future L_{dn} is 66 dB or below, we estimate that typical dual-pane construction-grade windows will suffice⁶. Window, door and wall ratings should be determined during the design phase, when detailed floor plans are available.

³ Telephone conversation with the City of Santa Clara Planning Department, 18 November 2003.

⁴ Sound Transmission Class (STC) — A single number used to compare walls, floor/ceiling assemblies, windows and doors for their sound insulating properties with respect to speech and small household appliance noise.

⁵ For corner rooms with each façade consisting of approximately one-third window, increase estimated STC ratings by 3 points.

⁶ Typical dual-pane, construction-grade windows achieve an STC rating of approximately 28.

Since windows must be closed to achieve the interior noise criteria, an alternate means of providing outside air to habitable spaces is required for facades exposed to an exterior L_{dn} of 60 dB, or greater (see Figure 1).

Parking Structure Noise

The proposed six-story building in the southeast corner of the site consists of three levels of parking below three condominium levels. Condominiums are planned on the fourth, fifth and sixth floor levels around the north, south, and east edges of the building (forming a U-shape above the rectangular base). A vehicle ramp is located along the western edge of the first three levels.

The existing residences adjacent to this portion of the site are currently exposed to vehicle noise from traffic along Lawrence Expressway and intermittent noise from trucks and cars accessing the existing parking lot. The proposed parking/housing structure has two, partially offsetting effects on noise:

- Vehicle noise in the garage, including tire, engine, and car alarm noise, may be audible at the nearest residences.
- The structure will provide some shielding from vehicle noise on Lawrence Expressway for the existing residences.

Specific mitigation of noise from the garage should be determined during the design phase, but may include the following:

1. Design the south edge and southwest corner of the parking structure to be fully enclosed, rather than open. The intent is to eliminate a direct line of sight from cars in the structure to existing residences.
2. Texture the driving surfaces in the garage to reduce tire squeal.
3. Where expansion joints occur, select tightly fighting covers with concrete fill to minimize noise as vehicles drive over them.

* * *

[illegible]

● INDICATES APPROXIMATE NOISE MEASUREMENT LOCATION

FIGURE 1

Charles M Salter Associates Inc 130 Sutter Street San Francisco California 94104 Tel: 415 397 0442 Fax: 415 397 0454